

What is claimed is:

1. A system comprising a two-dimensional  
photographing device and a three-dimensional measuring  
5 device that is removably attached to the two-dimensional  
photographing device, the two-dimensional photographing  
device and the three-dimensional measuring device  
communicating with each other, wherein information  
indicating an operating condition of one of the devices is  
10 transmitted to the other device, which receives the  
information and sets the own operating condition in  
accordance with the received information for photographing  
or measuring.

2. The system according to claim 1, wherein the  
15 operating condition of the two-dimensional photographing  
device includes at least one of a photographing area, a  
photographing resolution, a focal distance, the number of  
pixels and a magnification ratio, and the operating  
condition of the three-dimensional measuring device  
20 includes at least one of a measuring area, a measuring  
resolution, an angle indicating the measuring area, and  
the number of the measuring points.

3. A system comprising:  
a two-dimensional photographing device including  
25 a photographing portion for photographing the two-  
dimensional image of a subject, and  
a transmitting portion for transmitting information  
indicating a photographing condition of the photographing  
portion; and  
30 a three-dimensional measuring device that is

removably attached to the two-dimensional photographing device, the three-dimensional measuring device including a receiving portion for receiving information transmitted from the two-dimensional photographing device,

5 a setting portion for setting a measurement condition in accordance with the received information, and

a three-dimensional measuring portion for measuring a three-dimensional shape in accordance with the set measurement condition.

10 4. A system comprising:

a two-dimensional photographing device including a photographing portion for photographing the two-dimensional image of a subject,

a calculating portion for calculating information  
15 related to the measurement condition of the three-dimensional measuring device in accordance with the photographing condition of the photographing portion, and

a transmitting portion for transmitting the information calculated by the calculating portion; and

20 a three-dimensional measuring device that is removably attached to the two-dimensional photographing device, the three-dimensional measuring device including

a receiving portion for receiving information transmitted from the two-dimensional photographing device,

25 a setting portion for setting a measurement condition in accordance with the received information, and

a three-dimensional measuring portion for measuring a three-dimensional shape in accordance with the set measurement condition.

30 5. A system comprising:

a two-dimensional photographing device;

a three-dimensional measuring device that is removably attached to the two-dimensional photographing device, the three-dimensional measuring device including

5 a three-dimensional measuring portion for measuring a three-dimensional shape of a subject,

a transmitting portion for transmitting information of a measurement condition of the three-dimensional measuring portion; and

10 the two-dimensional photographing device including

a receiving portion for receiving the information transmitted from the three-dimensional measuring device,

a setting portion for setting a photographing condition in accordance with the received information, and

15 a photographing portion for acquiring a two-dimensional image of the subject in accordance with the set photographing condition.

6. A system comprising:

a two-dimensional photographing device;

20 a three-dimensional measuring device that is removably attached to the two-dimensional photographing device, the three-dimensional measuring device including

a three-dimensional measuring portion for measuring a three-dimensional shape of a subject,

25 a calculating portion for calculating information related to a photographing condition of the two-dimensional photographing device in accordance with a measurement condition of the three-dimensional measuring portion,

30 a transmitting portion for transmitting information

calculated by the calculating portion; and

the two-dimensional photographing device including  
a receiving portion for receiving the information  
transmitted from the three-dimensional measuring device,

5 a setting portion for setting a photographing  
condition in accordance with the received information, and  
a photographing portion for photographing a two-  
dimensional image of the subject in accordance with the  
set photographing condition.

10 7. A system comprising:

a two-dimensional photographing device;

a three-dimensional measuring device that is  
removably attached to the two-dimensional photographing  
device, the three-dimensional measuring device including

15 a three-dimensional measuring portion for measuring a  
three-dimensional shape of a subject,

a transmitting portion for transmitting information  
indicating a measurement condition of the three-  
dimensional measuring portion; and

20 a receiving portion for receiving the information  
transmitted from the two-dimensional photographing device,

a setting portion for setting a measurement condition  
in accordance with the received information when receiving  
portion received the information transmitted from the two-

25 dimensional photographing device; and

the two-dimensional photographing device including  
a photographing portion for photographing a two-  
dimensional image of a subject,

a transmitting portion for transmitting information  
30 indicating a photographing condition of the photographing

portion,

a receiving portion for receiving the information transmitted from the three-dimensional measuring device, and

5 a setting portion for setting a photographing condition in accordance with the received information when the receiving portion received the information transmitted from the three-dimensional measuring device.

8. The system according to claim 3, wherein the  
10 information indicating the photographing condition is a photographing area and a photographing resolution of the photographing portion, and the information indicating the measurement condition is a measuring area and a measuring resolution of the three-dimensional measuring portion.

15 9. A two-dimensional photographing device to which a three-dimensional measuring device is removably attached, the two-dimensional photographing device comprising:

a photographing portion for photographing a two-dimensional image of a subject, and

20 a transmitting portion for transmitting information indicating a photographing condition of the photographing portion to the three-dimensional measuring device.

10. A two-dimensional photographing device to which  
25 a three-dimensional measuring device is removably attached, the two-dimensional photographing device comprising:

a receiving portion for receiving information transmitted from the three-dimensional measuring device;

30 a setting portion for setting a photographing condition in accordance with the received information; and

a photographing portion for photographing a two-dimensional image of the subject in accordance with the set photographing condition.

11. A three-dimensional measuring device that is  
5 removably attached to a two-dimensional photographing device, the three-dimensional measuring device comprising:  
a three-dimensional measuring portion for measuring a three-dimensional shape of a subject, and  
a transmitting portion for transmitting information  
10 indicating a measurement condition of the three-dimensional measuring portion.

12. A three-dimensional measuring device that is  
removably attached to a two-dimensional photographing device, the three-dimensional measuring device comprising:  
15 a receiving portion for receiving information transmitted from the two-dimensional photographing device;  
a setting portion for setting a measurement condition in accordance with the received information;  
a three-dimensional measuring portion for measuring a  
20 three-dimensional shape of the subject in accordance with the set measurement condition.

13. The system according to claim 3, wherein the two-dimensional photographing device and the three-dimensional measuring device are enclosed with housings  
25 that are separated from each other and one of the housings is attached to the other to make one body.

14. A system comprising:  
a two-dimensional photographing device for photographing a two-dimensional image of a subject;  
30 a three-dimensional measuring device for measuring a

three-dimensional shape of the subject, having a variable measuring area;

a display portion for displaying the two-dimensional image photographed by the two-dimensional photographing

5 device; and

a display controlling portion for displaying a measuring area of the three-dimensional measuring device in the display portion along with the two-dimensional image,

10 15. A system comprising:

a two-dimensional photographing device;

a three-dimensional measuring device;

a display portion for displaying the two-dimensional image photographed by the two-dimensional photographing

15 device; and

a display controlling portion for displaying a distance image of the subject in accordance with the measurement result of the three-dimensional measuring device in the display portion along with the two-

20 dimensional image.

16. A system comprising:

a two-dimensional photographing device;

a three-dimensional measuring device;

a display portion for displaying the two-dimensional image photographed by the two-dimensional photographing device;

25

a display controlling portion for displaying an area information for designating a measuring area of the three-dimensional measuring device in the display portion along

30 with the two-dimensional image; and

a designating portion for designating the measuring area in accordance with the area information displayed in the display portion.

17. The system according to claim 14, wherein the two-dimensional photographing device and the three-dimensional measuring device are removably attached to each other, and information regarding the measuring area or the measurement result of the three-dimensional measuring device is communicated between the two-dimensional photographing device and the three-dimensional measuring device.

18. A two-dimensional photographing device to which a three-dimensional measuring device is removably attached, the two-dimensional photographing device comprising:

a display portion for displaying a two-dimensional image of a subject; and

a display controlling portion for displaying a measuring area in accordance with the information indicating a measuring area of the three-dimensional measuring device transmitted from the three-dimensional measuring device in the display portion along with the two-dimensional image.

19. A two-dimensional photographing device to which a three-dimensional measuring device is removably attached, the two-dimensional photographing device comprising:

a display portion for displaying a two-dimensional image of a subject; and

a display controlling portion for displaying a



distance image of the subject in accordance with the measurement result transmitted from the three-dimensional measuring device in the display portion along with the two-dimensional image.

5        20. A two-dimensional photographing device to which a three-dimensional measuring device removably attached, the two-dimensional photographing device comprising:

        a display portion for displaying a two-dimensional image of a subject;

10        a display controlling portion for displaying an area information for designating a measuring area of the three-dimensional measuring device in the display portion along with the two-dimensional image;

        a designating portion for designating the measuring  
15        area in accordance with the area information displayed in the display portion; and

        a transmitting portion for transmitting a measuring area designated by the designating portion in the three-dimensional measuring device.

20        21. A system comprising:

        a two-dimensional photographing device;

        a three-dimensional measuring device that is removably attached to the two-dimensional photographing device, the three-dimensional measuring device including

25        a measuring portion for measuring a distance to a subject at least for one point,

        an outputting portion for outputting the measured distance information to the two-dimensional photographing device; and

30        the two-dimensional photographing device including

a photographing portion for photographing a two-dimensional image of the subject,

an optical system for forming a subject image in the photographing portion,

5 a receiving portion for receiving the measured distance information outputted from the three-dimensional measuring device, and

a controlling portion for controlling a focused state of the optical system in accordance with the measured  
10 distance information received by the receiving portion.

22. A two-dimensional photographing device to which a three-dimensional measuring device is removably attached, the two-dimensional photographing device comprising:

15 a photographing portion for photographing a two-dimensional image of a subject;

an optical system for forming a subject image in the photographing portion;

a receiving portion for receiving measured distance  
20 information from the three-dimensional measuring device; and

a controlling portion for controlling a focused state of the optical system in accordance with the measured distance information received by the receiving portion.

25 23. The two-dimensional photographing device according to claim 22, wherein the two-dimensional photographing device includes a focused state detecting portion for detecting information regarding a focused state of the optical system for the subject, and the  
30 focused state of the optical system is adjusted in

accordance with the detection result of the focused state detecting portion when the three-dimensional measuring device is not attached to the two-dimensional photographing device.

5           24. A three-dimensional measuring device that is removably attached to a two-dimensional photographing device, the three-dimensional measuring device comprising:  
            an acquiring portion for acquiring measurement result information by measuring a distance to a subject at least  
10   for one point within a photographing area of the two-dimensional photographing device; and

            an outputting portion for outputting the measurement result information to the two-dimensional photographing device.

15           25. The three-dimensional measuring device according to claim 24, wherein the three-dimensional measuring device has a mode of measuring uniformly in a predetermined area and a mode of measuring one or more discrete points in the area for acquiring the measurement  
20   result information.